mental and neurological abnormalities. A family history of migraine was present in half the patients. Various auticonvulsants used in 10 patients were without benefit. The dose of flunarizine was 5 mg daily for 4 months. During the open study period, all but one patient had a reduction in frequency and/or duration and severity of attacks, and mental development improved in several. In a subsequent double-blind placebo-controlled withdrawal study lasting another 4 months, 6 patients received placebo, 3 continued flunarizine therapy, and 3 declined inclusion in the controlled trial. Deterioration occurred in 5 of the 6 placebo patients and 2 of the 3 flunarizine treated patients. Relapses were thought to be precipitated by parental anxiety occasioned by the double-blind protocol. Flunarizine was well tolerated except for somnolence and weight gain. The author is soliciting further investigators and patients for a larger, more definitive study. (Casaer P et al. Flunarizine in alternating hemiplegia in childhood. An international study in 12 children. Neuropediatrics 1987; 18: 191-195).

**COMMENT.** The failure of conventional anticonvulsant drugs in the treatment of alternating hemiplegia (AH) is well known. Propanolol (Inderal), of reputed benefit in childhood migraine, was without effect in 2 patients with AH followed personally, and flunarizine treatment observed in a 3-year-old boy had only an equivocal and partial effect.

The pathogenesis of alternating hemiplegia is unknown although a vascular mechanism related to migraine is probable. Calcium channel antogonists such as flunarizine, effective in the treatment of migraine, are vasodilators and prevent the influx of extracellular calcium into vascular smooth muscle (Peroutka SJ. Headache 1983; 23: 278). The response of AH to flunarizine is certainly not proven but the results of these preliminary studies are promising.

**RECTAL ANTICONVULSANT THERAPY**

The use of rectally administered antiepileptic drugs (AEDs) is reviewed by experts from the College of Pharmacy and Division of Pediatric Neurology, University of Minnesota, Minneapolis, Minn. Paraldehyde, diazepam, secobarbital, and valproic acid (VPA) in solution are used when a rapid effect is desired for termination of prolonged or serial seizures. VPA, lorazepam, carbamazepine, and phenytoin in suspension or suppository can be used in maintenance therapy. The authors recommended the following rectal doses: paraldehyde 0.3ml/kg diluted with an equal volume of mineral oil in glass, not plastic, syringe and rubber tube; diazepam 0.5mg/kg as parenteral solution or commercially available rectal preparation in Europe; valproic acid 6-15 mg/kg as oral solution diluted with equal volume of water; clorazepam 0.05-0.1 mg/kg as parenteral solution; clonazepam 0.02-0.1 mg/kg as suspension; secobarbital 5 mg/kg as parenteral solution or suppository; and carbamazepine 5 mg/kg as oral suspension diluted with equal volume of water as maintenance therapy

only. Experience with rectal phenobarbital and phenytoin is limited. (Graves NM, Kriel RL. Rectal administration of antiepileptic drugs in children. Pediatr Neurol 1987; 3: 321-326).

**COMMENT.** This practical and informative article emphasizes the usefulness of the rectal route of administration of antiepileptic drugs in children. The method is particularly applicable for use in the home by parents of children with acute recurrences of refractory epilepsies and as prophylaxis for febrile seizures at times of fever. Diazepam is the agent most commonly employed, and a commercial rectal preparation similar to those available in Europe would be welcome in the US.

## BEHAVIOR AND LEARNING DISORDERS

### ATTENTION DEFICIT DISORDER (ADDH) AND DELINQUENCY SUBGROUPS

Two subgroups of hyperactive children (25 non-delinquent and 9 delinquent) and 1 group of 34 non-delinquent normal children were evaluated from childhood to adolescence at the National Center for Hyperactive Children, Encino, CA, using auditory evoked response potential (AERP) measures and EEG recordings. Abnormalities of CNS maturation and function relected by longitudinal AERP changes and abnormal EEGs characterized the non-delinquent hyperactive subjects, while delinquent hyperactive subjects showed normal maturational changes. ADDH boys with neurologic abnormalities had a better outcome than those with normal CNS functions who later became delinquent and whose behavior was presumed secondary to environmental social factors. Two distinct subgroups of ADDH, one with and one without delinquency, were lineated. (Satterfield JH et al. Longitudinal study of AERP's in hyperactive and normal children: relationship to antisocial behavior. Electroenceph clin Neurophysiol 1987; 67: 531-536).

## MINERALS AND CNS DISORDERS

### FAMILIAL MAGNESIUM DEFICIENCY SYNDROME

Two sisters aged 4 and 8 years with convulsions and hypomagnesemia are reported from the Depts of Pediatrics and Nuclear Medicine, Univ of Nijmegen, The Netherlands. Both began to have seizures in infancy, one with fever, and both were mentally retarded. One had cerebral atrophy on CT scan. EEG showed seizure discharges with photostimulation in the older child. Phenobarbital and valproate were necessary for the control of convulsions. A low serum magnesium, accompanied by normal calcium and parathormone levels, was not related to the seizures. Urinary excretion of magnesium was elevated and urinary calcium was normal. Parents were consanguinous and had normal magnesium metabolism. An autosomal recessive mode of inheritance was presumed. (Geven WB et al. Isolated autosomal recessive renal magnesium loss in two sisters. Clinical Genetics 1987; 32: 398-402).

**COMMENT.** The above case shows an association of low magnesium and seizures with CNS pathology. Magnesium deficiency syndromes occur in association with 1) primary hyperparathyroidism, 2) primary aldosteronism, 3) fatty diarrheas, and 4) malnutrition.